

CLEAN COPY OF AMENDED CLAIMS

1. Process for producing an aqueous cationic dispersion of polymers having hydrophobic characteristics comprising emulsion polymerizing at a temperature ranging from 30 to 100°C one or more monomers in the presence of 30 to 50% by weight, with respect to the one or more monomers, of a surfactant consisting of imidized styrene/maleic anhydride copolymer, the solids content of the dispersion being 20 to 50%.
2. Process according to claim 1 wherein the weight ratio of styrene to maleic anhydride of the copolymer is about 1/1 to 6/1.
3. Process according to claim 2 wherein the ratio is 2/1 to 4/1.
4. Process according to claim 1 wherein the copolymer has a number average molecular weight of about 500 to 20,000.
5. Process according to claim 4 wherein the number average molecular weight is 2000 to 5000.
6. Process according to claim 1 wherein the copolymer has a degree of imidization of about 50 to 100%.
7. Process according to claim 1 wherein the copolymer is imidized by dimethylpropylene diamine.
8. Process according to claim 1 wherein the monomer(s) are one or more of either (A) hydrophobic monomers selected from the group consisting of
 - (i) alkyl (meth)acrylates of the formula (I):
$$\text{CH}_2=\text{C}(\text{R}_1)\text{COOR}_2 \quad (\text{I})$$
wherein R₁ = H or CH₃; and R₂ is a group having 1 to 22 carbon atoms;
 - (ii) perfluoroalkyl (meth)acrylates of formula (II):
$$\text{CH}_2=\text{C}(\text{R}_1)\text{COO}-(\text{CH}_2)_n-\text{C}_n\text{F}_{2n+1} \quad (\text{II})$$

wherein R₁ = H or CH₃; n = 1-4; and n' = 1-14;

- (iii) vinyl acetate;
- (iv) styrene; and
- (v) versatic esters; and

(B) hydrophilic monomers.

9. Process according to claim 8 wherein the monomer(s) comprise one or more hydrophobic monomers selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, and methyl methacrylate;

10. Process according to claim 8 wherein the monomer(s) comprise one or more relatively hydrophilic monomers selected from the group consisting of acrylic acid, methacrylic acid, acrylamide, and ethylene glycol (meth)acrylate.

11. Composition comprising an aqueous cationic dispersion prepared by process of claim 1.

12. Composition of claim 11 wherein the dispersed emulsion polymer particles have a size of about 50 to 500 nm.

13. Composition of claim 12 wherein the particle size is about 50 to 300 nm.

14. Composition of claim 11 wherein the dispensed emulsion polymer has a glass transition temperature of about -70°C to 100°C.

15. Composition of claim 11 wherein the glass transition temperature is about 0 to 50°C.

16. Process of treating paper or boards comprising using the composition of claim 11 as an internal sizing agent.

17. Process of claim 16 wherein no retention agent is used and immediate sizing is obtained.

18. Process of claim 16 wherein one or more additional sizing agents are used as surface sizing agents.

19. Process of claim 18 wherein the additional sizing agent(s) are selected from starches.

20. Composition useful for external sizing or internal sizing of paper or board comprising (A) an aqueous cationic dispersion prepared according to claim 1 and (B) starch in a weight ratio of (A) to (B) of about 5:95 to 50:50.